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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|---------------------------------|---------------------|------------------|
| 10/508,745 | 09/21/2004 | Robertus Adrianus Maria Wolters | NL02 0251 US | 8946 |

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| EXAMINER |
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ARENA, ANDREW OWENS

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| ART UNIT | PAPER NUMBER |
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2811

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/508,745 | | WOLTERS ET AL. | |
| | Examiner | | Art Unit | |
| | Andrew O. Arena | | 2811 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-16, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/21/2006 has been entered.

Claim Objections

A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim (13&18; 14) which depends from a dependent claim (6; 11) should not be separated by any claim (11&12; 13) which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim 14 is objected to because of the following informalities: there is insufficient antecedent basis for the limitation "the alternate layers" in the claim. Neither claim 14 nor the claims from which it depends (11 and 1) recite that the security coating is formed of multiple alternate layers (only claim 6 recites this limitation).

Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. An arbitrary coating must be either patterned or unpatterned, therefore, claim 19 introduces no limitations.

Claim 20 is objected to because of the following informalities: the metes and bounds of the limitation "patterned to provide capacitive coupling" are unclear, rendering the claim indefinite. For art-based rejection purposes any security coating will be regarded as "patterned to provide capacitive coupling".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US 6,137,173) in view of Bearinger (6,144,106).

In rejections beginning with "Davis discloses", column and line numbers refer to Davis. In rejections beginning with "Davis as modified by Bearinger discloses", column and line numbers refer to Bearinger.

Regarding claim 1, Davis discloses (Fig 15-17) a semiconductor device (col 4 ln 37) comprising:

a substrate (400; also Fig 10: 230 or Fig 14: 320) with a first (430) and an opposed second (460) side,

at which first side a plurality of transistors (col 3 ln 31-38, col 2 ln 35-36) and interconnects (col 4 ln 10-14) is present, which are covered by a protective security covering (250),

which device is further provided with bond pad (410) regions,

characterized in that the protective security covering comprises a substantially non-transparent (col 1 ln 8-10, 32-37, col 2 ln 19-21) and substantially chemically inert security coating (col 2 ln 64 - col 3 ln 3), and

the bond pad regions are accessible from the second side of the substrate (510).

Further Regarding claim 1, Davis discloses the security coating is formed of multiple alternate layers (col 5 ln 5-12, col 3 ln 55-61), but differs from the claimed invention only in not expressly disclosing "at least one layer of inorganic material."

Bearinger discloses a multilayer security coating (col 1 ln 9-10), teaches making electronic devices resistant to numerous analytical techniques (col 1 ln 12-18), teaches a layer providing protection via fillers (col 1 ln 50-55), said layer may be either inorganic (col 2 ln 65) or organic (col 3 ln 8-10), and teaches many fillers (col 5 ln 15-27).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Davis such that the security coating comprises

multiple alternate organic and inorganic layers, each layer comprising fillers, in view of Bearinger, at least for protection against a wide variety of analysis techniques.

Regarding claim 2, Davis discloses (Fig 15):

the bond pad regions are present on the first side (430, which is taken to include the sidewalls and bottom of trenches 440 in side 430) of the substrate, and

the substrate is a silicon substrate (col 3 ln 12, 28-33), that is patterned (440, 510) as required for access to the bond pad regions.

Regarding claim 3, Davis discloses (Fig 17) a security layer (540) is present at the second side of the substrate, which security layer leaves exposed any metallization (530) for access to the bond pad regions.

Regarding claim 4, Davis discloses (Fig 17) the bond pad regions are protected against probing (broadly interpreted as contacting with some probe tip) with antiprobe means (layer 250 prevents contact with bond pads 410).

Regarding claim 5, Davis as modified by Bearinger discloses the at least one layer of inorganic material (H-resin; col 2 ln 65) includes TiO_2 (col 6 ln 46).

Regarding claim 6, Davis discloses the security coating is formed of multiple alternate layers (col 5 ln 5-12, col 3 ln 55-61), which alternate layers are sensitive to different etchants (different layers are inherently sensitive to different etchants).

Regarding claim 7, Davis discloses (Fig 17) a carrier (250) comprising a semiconductor device according to claim 1.

Regarding claim 11, Davis as modified by Bearinger discloses the at least one layer of inorganic material (col 2 ln 65) includes titanium dioxide (col 6 ln 46).

Regarding claim 13, Davis as modified by Bearinger discloses the alternate layers include an organic layer (col 3 ln 8-10) and an inorganic layer (col 2 ln 65).

Regarding claim 14, Davis as modified by Bearinger discloses the alternate layers include an organic layer (col 3 ln 8-10) and an inorganic layer (col 2 ln 65).

Regarding claim 15, Davis as modified by Bearinger discloses the organic layer (col 3 ln 8-10) includes embedded particles of inorganic material (aluminum; col 6 ln 7).

Regarding claim 16, Davis as modified by Bearinger discloses the embedded particles include aluminum (col 6 ln 7).

Regarding claim 19, Davis discloses the security coating is either patterned or unpatterned (said coating must be either patterned or unpatterned).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Bearinger as applied to claim 11 above, and further in view of Fuji (JP 60-170239).

Regarding claim 12, Davis as modified by Bearinger differs from the claimed invention only in not disclosing aluminum-metaphosphate.

Fuji discloses a semiconductor protective coating of aluminum metaphosphate (PAJ abstract: Purpose; see especially the Derwent entry TITLE on the second page of the included attachment).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Davis as modified by Bearinger in view of Fuji such

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that the at least one layer of inorganic material further includes aluminum-metaphosphate; at least for high mechanical strength (Fuji: abstract: Purpose).

Further regarding claim 12, the product-by-process limitation “derived from precursor materials consisting of $\text{Al}(\text{H}_2\text{PO}_3)$ or mono-aluminum-phosphate” has not been given patentable weight. The case law establishing this precedent follows:

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Beringer as applied to claims 1 and 19 above, and further in view of Gaumet (US 5,847,931).

Regarding claim 20, Davis differs from the claimed invention only in not disclosing an “antenna”.

Gaumet discloses (Fig 1) a packaged integrated circuit (2; col 2 ln 33) wherein the coating (4) is patterned (col 2 ln 60-62) to provide capacitive coupling from the semiconductor device to an antenna structure (3) in a carrier (col 2 ln 67 – col 3 ln 1).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Davis such that the security coating is patterned to provide capacitive coupling from the semiconductor device to an antenna structure in a carrier, as taught by Gaumet; at least to enable signals to be transmitted without making contact (col 3 ln 2-3).

Allowable Subject Matter

Claims 17 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the references of record, alone or in combination, do not disclose at least the limitation

“the security coating comprises,
a TiO₂ layer, and
a multi alternating layer structure formed of AL and W layers, respectively”
as required by claims 17 and 18.

Response to Arguments

Applicant's arguments filed 03/21/2006 have been considered but are moot in view of the new grounds of rejection.

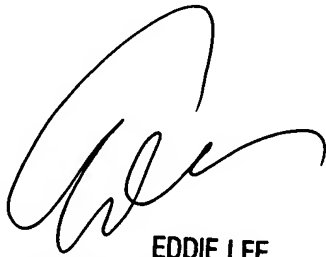
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is (571) 272-5976. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AOA
27 May 2006



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